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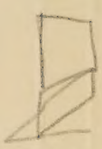


13-4066

SIGMA XI
THE SCIENTIFIC RESEARCH SOCIETY OF NORTH AMERICA
Massachusetts Institute of Technology Chapter
Cambridge, Massachusetts 02139

MIDDLESEX-ESSEX, MA 019
PM
13 APR
1983

Brewster L Kahle
32 Hereford St
Boston, MA 02115

SIGMA XI
THE SCIENTIFIC RESEARCH SOCIETY OF NORTH AMERICA
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CAMBRIDGE, MASSACHUSETTS 02139

March 21, 1983

Dear Colleague:

In recognition of your academic record and an aptitude for research in your professional field, you have been nominated to Associate Membership in the MIT Chapter of Sigma Xi, the Scientific Research Society of North America. Election will become effective upon receipt of your acceptance of this nomination.

Sigma Xi is an honorary society dedicated to the encouragement and promotion of research in pure and applied science, engineering, and related professions. Election to the Society is an honor implying high scientific knowledge to the benefit of mankind. I enclose for your information a brochure describing Sigma Xi and a recent copy of American Scientist, the Society's journal, which is one of the benefits of membership.

If you wish to accept this nomination, will you please complete the enclosed forms and return them to me in Room 13-4066 ~~by Friday, April 1, 1983, if you wish to attend the dinner; otherwise,~~ by Friday, April 29.

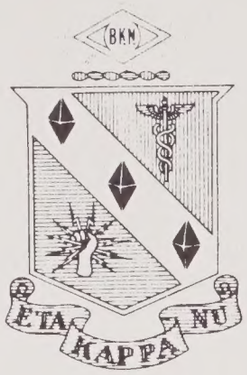
Membership in Sigma Xi is nationally recognized as a mark of personal excellence in scientific and engineering research. On behalf of the MIT Chapter, it is my privilege to extend to you this invitation to accept election into Sigma Xi.

Sincerely,

Linn W. Hobbs
Chapter Secretary

LWH/ac

Enclosures



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Electrical Engineering Honor Society

Sigma Xi's principal source of income is the annual membership dues, which for 1982-83 are $20 for each Member and Associate Member. A proportion of these dues is returned to the chapters and clubs, which may in addition levy local dues on affiliated members. The annual dues also support the Grants-in-Aid of Research Program, which receives additional funds from earnings on endowments, from donations by many individual members, and from income related to the operation of Sigma Xi's headquarters building. Annual dues include a subscription to *American Scientist.*

Sigma Xi welcomes inquiries about its activities and about membership. These may be made to the headquarters office, or to the officers of individual chapters and clubs.

Officers for 1982-83

V. ELVING ANDERSON — *President*
JOHN W. PRADOS — *President-elect*
GORDON B. CARSON — *Treasurer*
WILLIAM A. NIERENBERG — *Immediate Past President*
C. IAN JACKSON — *Executive Director*

Headquarters office: 345 Whitney Ave., New Haven, CT 06511
(203) 624-9883

Sigma Xi
The Scientific Research Society

Sigma Xi, The Scientific Research Society, is an honorary organization dedicated to the encouragement of research in the pure and applied natural sciences. These include the physical sciences, the life and agricultural sciences, earth sciences, medical sciences, mathematics, and engineering. Sigma Xi is also concerned with the relationship between natural science and the social sciences and humanities, and with the impact of scientific research on society.

Since it was founded in 1886, Sigma Xi has elected more than 360,000 members; at present more than 120,000 scientists are active members. The majority are affiliated with approximately 500 chapters and clubs across North America. Other members in North America constitute the Chapter-at-Large, and approximately 2,500 members throughout the rest of the world belong to the International Chapter.

Membership

There are two categories of membership in Sigma Xi: Associate Members and Members. The distinction between these categories is that between evidence of research potential and documented research achievement. Membership in either category is based solely on evidence of research aptitude and achievement, not on scholastic performance as measured by grades or by the possession of any degree. Individuals who have been elected Associate Members at the outset of their research work may subsequently be promoted to full membership.

Sigma Xi is not merely a "recognition society" which has the recognition of achievement as its primary purpose. Rather it exists to encourage further scientific research. Because its members are drawn from all branches of science, Sigma Xi gives particular emphasis to the integration of research activities across the spectrum of science, and to the communication of research ideas, methodology, and achievements.

Activities

Chapters and clubs meet to discuss scientific topics, to visit laboratories and scientific sites, and to participate in similar activities. In recent years, many chapters and clubs have become actively involved in communicating scientific developments to a wider audience in the community, and in recognizing scientific endeavor and teaching in schools. Each chapter or club develops its own program, but Sigma Xi's Lectureship Program enables distinguished scientific investigators, who have made outstanding contributions and who can convey their research in progress to interdisciplinary audiences, to visit chapters and clubs across the continent.

Since 1913 Sigma Xi has published *American Scientist*, widely recognized as a major interdisciplinary journal for review articles and for the communication of scientific ideas across the disciplines. Appearing six times a year, *American Scientist* also includes book reviews, discussion of contemporary scientific issues, and news of Sigma Xi activities. Non-members may also subscribe to the journal.

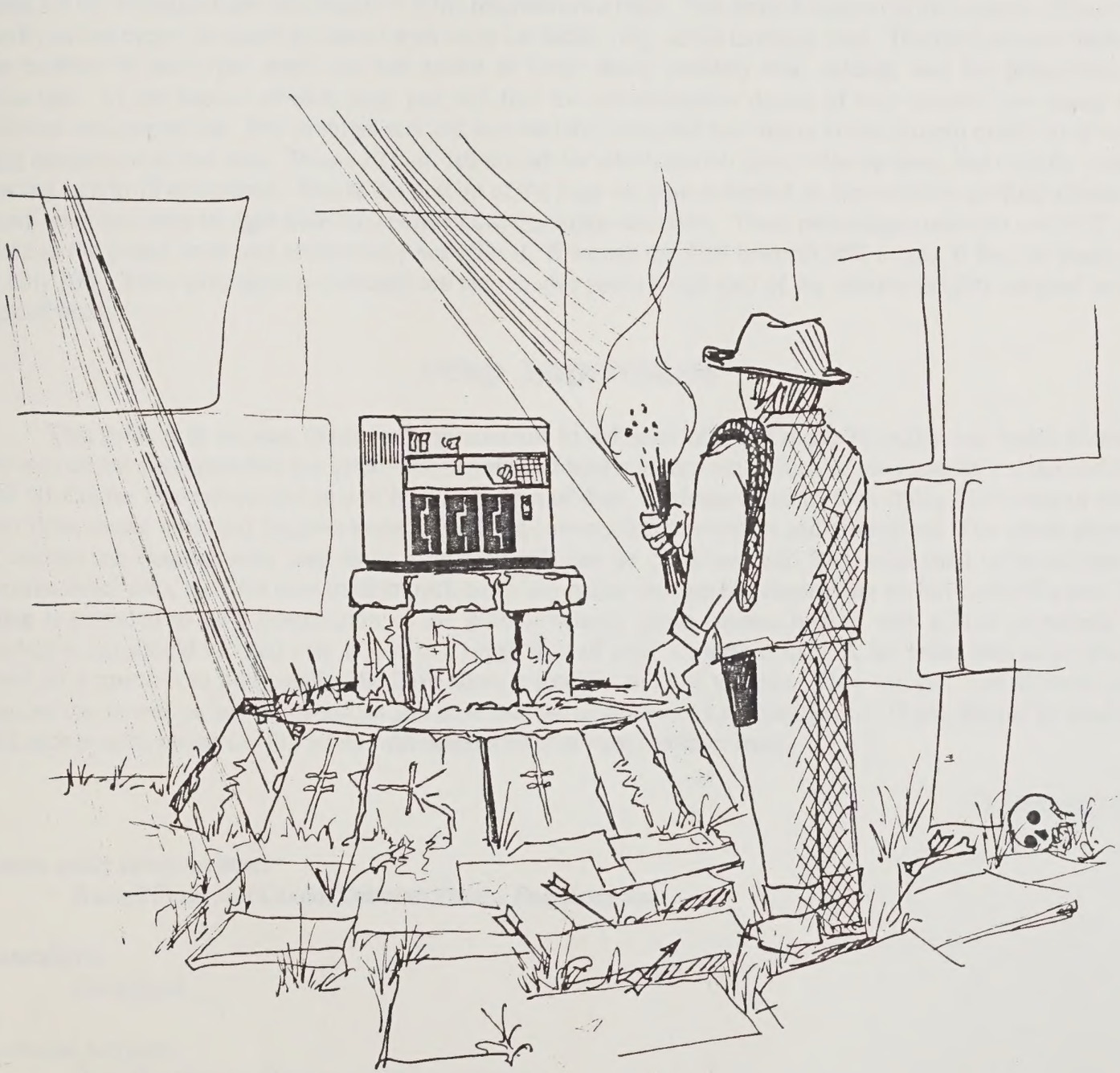
The Grants-in-Aid of Research Program is particularly important in encouraging individual scientific research, especially by those at the outset of their careers who may have difficulty in obtaining funds from other sources. Three times each year, Sigma Xi's Committee on Grants-in-Aid of Research meets to consider requests for assistance; awards are made without regard to whether the applicant is a member of the Society. The maximum individual grant is $1,000, since it is believed that the program can be of most benefit if small grants are made to as many applicants as possible. In 1981 929 individuals were awarded a total of $194,622 so that the average grant was $210. Not merely can these small grants play a crucial role at a critical point in the career of a researcher, they also often act as "seed corn," facilitating the subsequent award of larger grants from other bodies.

The William Procter Prize for Scientific Achievement is awarded annually by Sigma Xi. In 1981 the recipient was George W. Beadle. Sigma Xi cooperates with the Trustee of the Common Wealth Awards for the recognition and encouragement of outstanding achievement in science by individuals or institutions throughout the world.

Governance and finance

Governance of the Society is vested in an Annual Assembly of Delegates from the chapters and clubs. This Assembly elects the Officers of the Society and members of its Board of Directors. The Society maintains a headquarters office in New Haven, Connecticut, with a staff led by the Executive Director.

Ye Underground Course 6 Guide



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CAVEAT LECTOR

In this course guide we have reviewed all the 6-1 and 6-3 core courses, the 6-3 restricted electives, and a few of the common labs. These reviews are based on the comments written by students on end of the term Course Evaluations (yes, somebody does read them!) as well as on our own experiences and those of our friends. For each course we have recomputed the credit hours to reflect the actual amount of time spent. The first number indicates how many hours a week you can expect to spend in some type of class. This can differ from the registrar's number in either direction. For instance, a course with two lectures and two recitations a week plus optional tutorial could be rated 2 if the recitations are worthless or 5 if the tutorials are a must. The second number is the number of hours per week you can expect to spend in contact with some lab facility, e.g. actual terminal time. The third number indicates the number of hours per week you will spend at home doing problem sets, reading, and lab preparations or write-ups. At the bottom of each page you will find the administrative details of each course: how many tests, problem sets, papers, etc. For problem sets and labs we have indicated how many hours you can expect to spend on each assignment of that type. Thus a 10 hour lab is a lab for which the lab time, write-up time, and time for relevant reading sum to 10 hours total. Also at the bottom of the page we have indicated an approximate grading scheme. In many cases this came straight from the courses formal grading statement. These percentages however are NOT to be taken as the gospel truth and are certainly not official. If we say the final is worth 30% it may, if fact, be worth 40% or only 20%. These published percentages are only to give you a rough idea of the relative weights assigned to each type of work.

VERY IMPORTANT

This guide is in no way, shape, or form attempts to delineate official Course VI policy nor would it care to. We also do not guarantee that the information contained herein is accurate. Much of the material was derived from Fall '81 Course Evaluations and so is at least a year out of date. Professors change their styles, (for better or worse) over time, course notes can improve immeasurably or, conversely, be rewritten and error-filled. The whole structure of courses can change; what used to be a problem sets can be combined into labs, what used to be quizzes can become major tests, etc. We have tried to track down any major changes but chances are we have missed some. This guide is intended to be a compilation of the general hearsay about courses backed with a little objectivity and hindsight and should be used only to obtain a rough idea of what a course is like. A far better way to get the low down on a course is to find people who have taken it recently and talk to them. They can give you far more detail than we can as well as answer questions you have that we might never have thought of. If you should be unable to find such people, please use this guide with skepticism or at least common sense.

- J. Connell, Editor

Course guide subcommittee:
Russell Finn, Joel Gould, Deborah Pekala, Eng-Beng Sia

Illustrations:
Bill Spitzak

Technical Advisors:
Only The Shadow Knows. -- El Hak y su hijo.

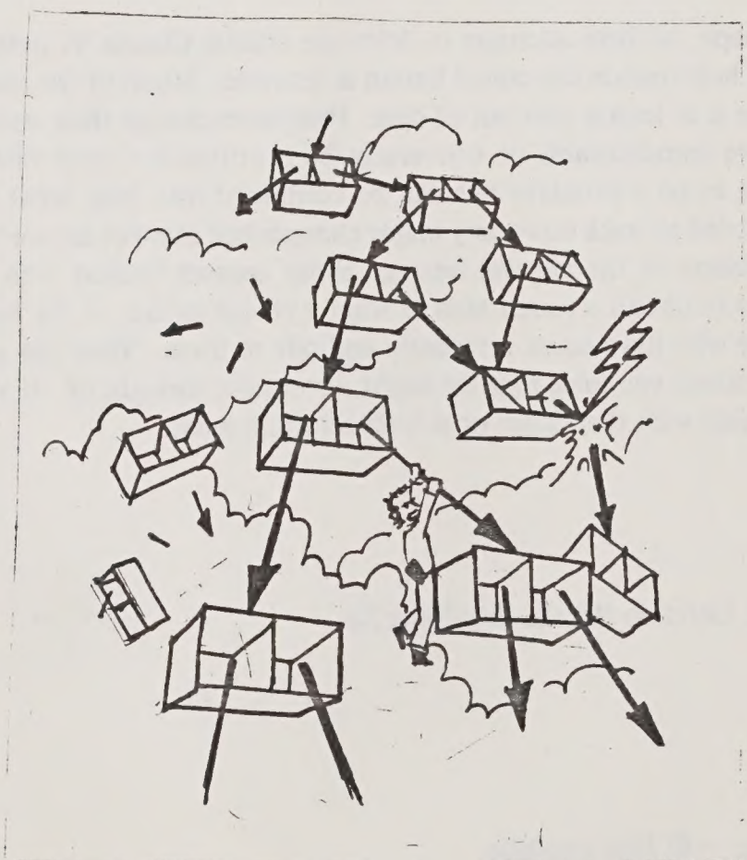
6.001: Scheme (4-8-5) Fall 1982: Abelson

The course is structured around the language Scheme, a dialect of Lisp. It does provide a good background in the fundamentals of computer science, and is adequate preparation for later 6-3 courses. The lecturers (Sussman and Abelson) are considered pretty good; the tutorials, except for Ed Walker's, are highly recommended. The course notes are useful, at the outset anyway; the last third of the course notes are poorly written and incoherent.

A word about the labs: this course has a reputation for inadequate computer facilities. It is fairly common to spend all night in the terminal room, either waiting for a terminal or working on your program (most 6.001 students learn to debug efficiently or perish in the attempt). However, if you are either a careful planner or a programming wizard, you shouldn't have a lot of problems.

"I don't think I would have gotten through the course with my sanity if there were no tutorials."
"Tutorials: Pat O'Donnell's were very good. Questions were answered in great detail, and confusion was expunged."
"I spent about 25 hours a week on the average [on this course]. Luckily for me, I enjoyed it."

Grade based on:	***Grading:***
Final	30% Final
2 Exams	40% Tests
12 Labs (~10 hours each)	30% Labs

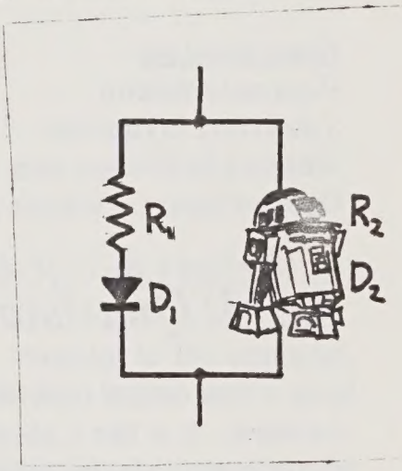


6.002: Introduction to Electronics (4-3-8) Fall 1982: Searle

This course has good lectures with neat demos. Roberge and Senturia especially are good, but Searle tends to be kind of dry. Recitations were generally good as well (particularly Zue and Sastry). This, however, is NOT a good survey course; it IS a good course (and necessary) for EE majors.

So much for the good points. Most people thought that the material was presented in far too theoretical manner, and while lectures were interesting, you actually learned how to do the stuff in recitation (i.e. don't punt them). This course has several short quizzes sprinkled throughout the term. Each recitation instructor makes up his own quiz and these vary widely from instructor to instructor. There were also complaints that there were time pressures on these quizzes, something that was designed to be a 15 minute quiz ended up taking closer to 45. As for the labs; the post-lab exercises tend to be a real pain and if you miss a lab they'll screw you to the wall. A common disease of Course 6 courses crops up here as well: the material needed to do a problem set was not presented, in some cases, until the day before the problem set was due. Another observation made by many was that your grade on the final was your grade for the course.

"Exams were MUCH too long to complete if you had to stop and think about anything. EVERYTHING had to be automatic or else you wouldn't finish."
"Q. What was bad about this course? A. That it's required for 6-3's."
"Why do you give out 13 problem sets and 4 or 5 labs and not use them in grading?"



Grade based on:
Final
5 short (1/2 hr) Quizzes
Weekly 6 hr Problem Sets
4 Labs (about 7 hrs each)

Grading:
50% Final
10% Quizzes
20% PS's
20% Lab

6.003: Linear Systems (4-3-5) Fall 1982: Siebert

Most people thought this was a pretty good course. The material is VERY theoretical but useful. It is irrelevant to CS but relatively painless. The lectures vary in quality: Siebert is *fantastic*, Kennedy is good, and Greschak isn't. The material is cumulative - it is essential that you understand the early stuff before going on. At the end of the term they get into radios and such which most people found very interesting. Unfortunately, at this time there is an end-of-the-term crunch and the course seems to be moving at light-speed.

The labs in this course are interesting, doing the prelabs is absolutely essential for knowing what you are doing in lab. The post-labs, however, are real tough. This course is, as many courses are, run on a set of course notes. The notes for 6.003, however, fall apart about half way through (i.e. the old sections of the notes are dreadful).

"The labs were: build the circuit, take measurements, then answer impossible questions in post-lab."
"Encyclopedia Britannica in one hour!"
*"Siebert's **fantastic**."*

Grade based on:
Final
5 short (1/2 hr) Quizzes
Weekly 5 hr Problem Sets
4 Labs (about 7 hrs each)

Grading:
50% Final
10% Quizzes
20% PS's
20% Labs

6.012: Semiconductor Devices (4-0-7) Fall 1982: Epstein

This course deals primarily with semiconductor physics. Don't let the title fool you, you are taught very little circuit theory - you are expected to know that when you come in (more complex stuff than 6.002). A lot of people would have liked more emphasis on circuits and less on device physics. This is, however, a fairly practical course - you can do something with it afterwards.

This course's workload is fairly heavy and the pace is fast. A lot of people complained that the problem sets were too long and required an excessive amount of number crunching. Another fairly uniform complaint was that the text (Gray and Searle) was not very useful since it was out of date and expensive to boot. The hallmark of this course is the Design Project. This is a problem involving complex circuit design assigned 3 weeks before the end of the term. This must be completed - they refuse to give Incompletes on the basis of the design problem. Yet many people said this was the best part of the course.

"Actually the material was interesting - it's just that the pace was intolerable."
"The design project was an excellent integrating exercise. I learned more from doing it than from anything else so far at MIT. I certainly learned from doing it everything I didn't learn in 6.002."

Grade based on:
Final and Midterm
5 short (1/2 hr) quizzes
Weekly 6 hr Problem Sets
Design Project (= infinite time)

Grading:
30% Final
20% Midterm
20% Quizzes
15% PS's
15 % Design Project

6.013: Quasistatics (5-0-5) Fall 1982: Melcher

This course receives rave reviews. The course teaches what it promises at a pace which is fast but not excessive. It is like a physics course; lots of powerful concepts augmented by a sturdy mathematical background. Yet it is not a physics course in that one does not get buried under math. Also, in contrast to some of physics, you can do real things with the course material. That is, they teach you how to design real equipment.

As far as the running of the course, people said that Haus was an excellent lecturer and very enthusiastic. Melcher is more sedate than Haus, but is very clear. Among the recitation instructors some found Smullin to be confusing but most rated the value of recitations highly. One bad point, however, is that the same examples are used in recitations as are already solved in the notes. The quizzes in this course are trivial: if you know the material you will have no problem. Some thought this was a good idea since they are not trying to screw you on exams but merely seeing if you have understood the material so far. Others didn't like the fact that class average was so high.

"Best organized and taught course I've ever taken at the Institute! Haus is wonderful and really cares about his students. I was highly impressed."
"The primary purpose of the course seemed to be to teach the course material. Tests were very reasonable. Instructors were friendly and good."

Grade based on:
Final
3 Tests
Weekly 5 hr Problem Sets

Grading:
50% Final
50% Tests
+ considerable effect of PS's

6.014: Electromagnetic Waves (5-0-5) Fall 1982: Staelin

This course also receives fine reviews. Lecturers in this course are generally good; Kong is enthusiastic and Staelin is good but goes too fast. A high point of lectures are the demos and movies. The tutorials are considered to be highly useful and worth attending.

The course is run largely on the course notes. Many people, however, feel that the notes need considerable improvement (some action along this line has already been taken). Another complaint was that the material needed to do a problem set was often not covered until the day before the problem set was due. The tests in this course are harder than in 6.013. The official grading policy is worth reading for entertainment. Here it is: Late Homework grades will be weighted by the factor: $| \mathrm{Re}\,(e^{-\alpha t} + j\omega t) |$ for $t > 0$, where t is time measured in hours, $\alpha = 1/96$, $\omega = \pi/24$, and $t = 0$ is set at 4:00 P.M. on Friday when the homework is due.

The term grade G is computed as the magnitude of the complex number $3Q + 5H + j6F$ where Q, F, and H are all no less than zero and no greater than ten; Q represents the total quiz grade, F the final grade, and H the homework and tutorial grade.

"Follows general 6.01X teaching pattern: Snow 'em in lecture, work it out in recitation, figure it out on problem set, and finally understand it in tutorial."
"Kong finally made me believe that 'plun' waves are made up of 'ee' and 'etch' fields."

Grade based on:	***Grading:***
Final	30% Tests
Weekly 5 hr Problem Sets	40% PS's

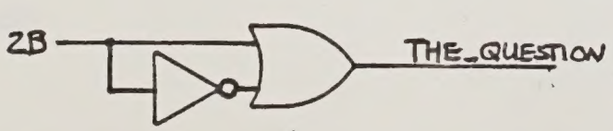
6.032: Computer Hardware (3-0-7) Fall 1982: Ward

The basic material covered by the course is pretty good. 6.032 goes from the transistor to the computer, discussing lower level concepts, such as hardware, microcode, and some digital design. It provides a good background for other courses, particularly 6.111.

There are two exams, of which the first is easy and the second is a killer. The general consensus about the lecturers is that Dertouzos is excellent, Ward is pretty good, but Fredkin is poor. The pace accelerates noticeably about halfway through the course. The lecture notes need a good deal of work; don't miss the lectures (although they're somewhat disjointed), or you'll quickly get lost. The administration of the course is sloppy; corrections to handouts are common and not always prompt.

"The organization and continuity of the course was very poor. It was necessary to teach yourself much of the material."
"Playing musical lecturers really sucks!"
"Fredkin puts me to sleep."
"The first half of the course . . . was well run and interesting. . . . The course notes were some of the worst I have seen. They were at very critical points confusing, poorly edited, error filled, and incompetently written. These need a thorough revision into comprehensible English."

Grade based on:	***Grading:***
Final	40% Final
2 Tests	30% Tests
Weekly 5 hr Problem Sets	30% PS's



6.033: Computer Systems (3-0-8) Fall 1982: Reed

Be prepared to do a lot of reading for this course. Like so many other course VI subjects, there is no text, merely a copious amount of lecture notes, and 6.033 has perhaps more of these than any other course. The notes are in a continual stage of rewrite; if you're reading a section that's just been rewritten, it's not too bad, but if not . . . Some of the supplemental reading is interesting, particularly Brooks' *Mythical Man-Month*, a book you may want to keep after the course is over.

This course involves a lot of writing as well, and in fact works closely with the Writing Program. There are weekly short papers (about a page) based on the reading, and three case studies of five to ten pages each, where the students solve some imaginary system engineering problem. One of each is graded by the Writing Program as well as by your TA; help is available if you have trouble writing.

There is some interesting material in this course; the recitations frequently involve interesting discussions. Too bad Reed is such a lousy lecturer, or the lectures would be interesting too. There is a special quiz period scheduled for the quizzes and for Writing Program lectures.

"Some of the notes are very good, some are very bad, and some haven't even been written yet."
"The lectures were duller than death."
"Tests were designed in such a way that a minor misunderstanding usually resulted in loss of full credit on a problem."

Grade based on:
NO Final
4 Quizzes
Weekly short papers (1 hour)
Two or three case studies (8 hours)

Grading:
25% Quizzes
30% Short papers
25% Case studies
20% Class participation

6.034: Artificial Intelligence (3-0-1) Fall 1982: Winston

6.034 is a course in which the lecturers talk about what they happen to be interested in at the moment. Usually this material is interesting for the students as well, but because of this the topics vary from year to year, and there is no well-defined progression of topics. There is little feedback from the instructors on your progress; the problem sets, which involve a lot of grunge work, are not graded or commented on before the tests. Your grade is based on the midterm and final, period. There are frequent guest lecturers, which people seem to enjoy. The lecturers make frequent use of overhead transparencies but as it is you have to write fast if you want the information in your notes since they do not hand out copies of them.

"This is a thinking man's course: it's very easy to see people getting very interested in any or all of the topics introduced."
"Fascinating, well-presented. All lectures were triple-A star great! I recommend the entire Tute take this on listener status, or give it as a series of LSC lectures, or something."
"Problems sets STILL haven't been returned. . . . I never felt involved with the course. The staff attitude was too passive to elicit much of a response."

Grade based on:
Final and Midterm
Three 6 hr Problem Sets

Grading:
50% Final
50% Midterm

6.035: Compilers and Interpreters (2-0-8) Fall 1982: Hammer

It is unfortunate that Mike Hammer is taking a sabbatical; he is perhaps one of the better lecturers in the department. It is hard to say what will happen to the course without him. The course contains a lot of information which, unlike other courses, has some relevance to the outside world. However, one rarely learns anything from the recitations, and little from the lectures; most of what you learn comes from what you had to make up to answer the problem sets.

And speaking of those infamous problem sets . . . Formerly, they involved essay questions, three per week; the answer were expected to contain a lot of detail and be about two pages long each. Last year, a different scheme was tried. Two types of problems were assigned, written and oral. The oral questions were problems from previous years together with their solutions, which the students were expected to discuss and criticize in class on a weekly basis. The written problems were assigned on a weekly-to-biweekly basis, and formed the equivalent of two term projects. One project, for example, involved the implementation of an APL compiler in PDP-10 assembly code! The oral discussions do not seem to be working well, and it is unclear what will be done next year.

The exams are equally infamous; they are true/false and multiple choice questions, but with enormous penalties for incorrect answers to "discourage" guessing (there are always a few students who end up with negative scores), although timid strategies don't seem to work well either. The questions are often purposefully deceptive; watch out for pathological cases and other tricks.

There is a text, but it is not used much; there are innumerable handouts, journal reprints, problem set solutions (generally long and confusing), and the like. WARNING: this course is rumored to be C-centered, so don't treat it lightly!

"This is the first course VI course that's actually taught something useful for computer science."
"Hammer's teaching style resembles driving nails into concrete. Senturia and Siebert could at least soften the brain before deforming it."

Grade based on:	***Grading:***
Final and Midterm	30% Final
Weekly 6 hour written assignments	20% Midterm
Weekly oral discussion	50% PS's

6.036: Problem Solving Paradigms (2-0-4) Fall 1982: Not Offered

This is purported to be an extension of 6.034 along the lines of predicate calculus, resolution theorem proving, and truth maintenance systems. This can be a great course if you're interested but it is a waste of time if you are not. It is generally a dreadfully taught course with little or no overall structure. Minsky gives "stream of consciousness" lectures while Hewitt has a humorous lecture style but is not very organized. When Szolovitz and Schrobe teach the course it displays a some sense of continuity. Problem sets come out sporadically and vary widely in difficulty. Students from the class are selected to grade various sections of each problem set. At the end of the term there is a paper due on some aspect of the course material. This generally involves a search of the literature and a critique or extension of some specific idea (they give you a list of suggestions).

"I was very discouraged - yet I enjoyed 6.034 immensely."
"You learn more from researching the term paper than from the whole rest of the course."

Grade based on:	***Grading:***
NO Final	60% Term Paper
NO Tests	40% PS's
3 Problem Sets (2 to 12 hrs each)	
Term Paper	

6.041: Probability (4-0-7) Fall 1982: Drake

When Drake lectures this course, it is excellent. Without him . . . Fortunately, you can still see him on the video tapes, which are useful for reviewing the material; there is usually a rush to use them just before quizzes, so plan ahead. The problem sets are graded on a statistical basis, i.e. one or two problems are selected at random and graded. There is an optional third quiz, if you're going down the tubes. The tutorials are mandatory, but they're also quite useful. This is a well organized course, both in the material covered and in the administration. 6-3's will find nothing in it pertinent to their major, but will not mind taking it anyway.

"Denny Freeman is the most boring, uninspiring, and incomprehensible lecturer I've had in all my career at MIT."
"Last year's problem set solutions were not clear enough to copy."
"Drake is the type of lecturer who can make this totally boring material seem interesting and entertaining."
"All these years and Oscar has yet to find his dog. That's going against the odds for you."

Grade based on:
NO Final
3 Quizzes plus one optional
Weekly 4 hr Problem Sets

Grading:
50% Quizzes
50% PS's

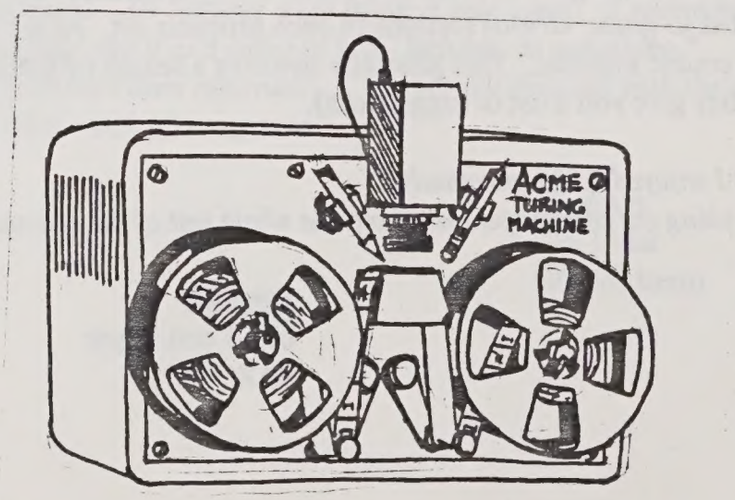
6.045: Formal Study of Automata (3-0-5) Fall 1982: Sipser

This is MIT's version of *Godel, Escher, Bach.* This is definitely a math course (joint with 18.420) and as such you end up writing a lot of proofs. The course begins slowly but after the middle of the term it goes too fast. Problem sets used to be very long but now they are shorter and they are graded by students in the course, a very unpopular idea. Lectures are definitely worth attending as Sipser is a coherent lecturer with good delivery and quizzes tend to be taken straight from the lectures.

"This course was particularly good for people who like to diddle with mathematical concepts, proving all sorts of things by being intuitively clever."
"Sipser takes his lectures straight from the book. Luckily, he can still get people to come to class by taking his quizzes straight from his lectures."

Grade based on:
Final
2 Tests
Weekly 5 hr Problem Sets

Grading:
25% Final
50% Tests
25% Problem Sets



6.046: Algorithms (3-0-8) Fall 1982: Rivest

This is the "order of" (n, log n, n^2, . . .) course. It covers standard computer techniques such as: sorting and searching, manipulation of data structures, graph algorithms, etc. It also covers the traveling salesman problem and NP completeness among others and, needless to say, has a lot of proofs. There was good continuity from one lecture to another and the lecturer (Rivest), although a little dull, will answer questions in class.

This is another of the courses that often has student grading, that is, people in the class grade the problem sets. Student grading was almost universally disliked; people thought there should have been a larger staff to handle such things. The problem sets are long and hard and the questions are often intentionally ambiguous. The tests are take-homes and are much longer and harder than the problem sets (sounds great doesn't it?). The final is often a take-home as well and is tough. A big complaint was that there are multiple text books for this course which can add up to megabucks.

"If you see the answer immediately it is real easy, if you don't you spend a lot of time looking for the right trick."

"Exams were infinitely more difficult than homework, either make one easier or the other harder to match."

Grade based on:	***Grading:***
Final	30% Final
2 Exams	30% Exams
Weekly 10 hr Problem Sets	40% PS's

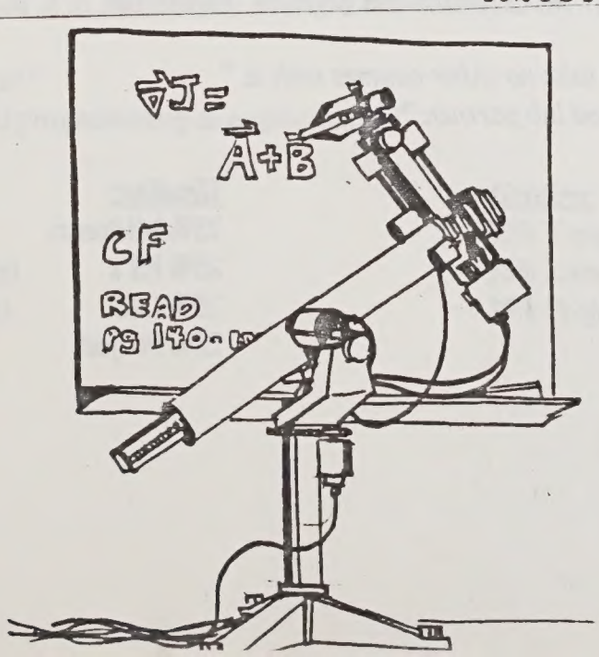
6.088: Robotics (3-0-5) Fall 1982: Horn

The course covers manipulators and vision but tends to concentrate on the dullest and grungiest portions of these topics. The manipulation portion of the course has matrices galore and uses a lot of control theory. The vision portion is interesting until it, too, turns to math. Horn talks primarily about what he himself has done and as a lecturer is unenthusiastic. People wanted more theory such as obstacle avoidance and gripper design and less on dynamics and control. Both the midterm and the final are long take-home problem sets.

"The concepts were interesting; the math was a pain."

"B.K.P. Horn is a prime example of artificial intelligence."

Grade based on:	***Grading:***
Final and Midterm	25% Final
Weekly 5 hr Problem Sets	25% Midterm
	50% PS's



6.101: Analog Lab (1-4-1) Fall 1982: Paton

This is the department's basic analog lab. The TA's in this course are good but the lecturer (Paton) is not. He is poorly organized and does not get any concepts across. Fortunately you can ignore him. The assigned labs are reasonably coherent and if you know anything about electronics you should have no trouble with them. In the second half of the term there is a design project which is generally not as complex as the projects in 6.111. Seeing as the second half is basically the design project, recitations end about half way through the term although the TA's are always available.

"... if you want an easy lab..."
"After several weeks the TA's gave up trying to correct the lecturer."

Grade based on:	***Grading:***
NO Final	25% Tests
3 Tests	25% Labs
5 Labs (about 10 hrs each)	50% Project
Design Project	

6.111: Digital Lab (First 2/3: 2-6-2) Fall 1982: Troxel

Second 1/3: 0-12-18

This course is designed to introduce digital design techniques. It is a crash course in how to debug digital circuits. The key word there is 'crash' since the final project requires 24-hour attention. 6.111 is an excellent course, if you have any knack for digital design, you can pick up enough experience in this course alone to get a job doing digital design. However, if you can't figure out how to debug a circuit you are going to be very lost, and no one will be able to teach you how to get a circuit to work.

The course is primarily a lab course, the first half of the course consists of four labs designed to introduce you slowly(?) to the techniques involved. The first lab is a thirty second warm-up, but don't be fooled; the fourth lab requires about twenty lab hours just to debug assuming your original design is workable. The second part of the course is the famous final project. The goal is to select a partner and, working as a team, design and demonstrate a digital system of your own choosing. If you survived the course this far, the final project can be fun. You are free to select any type of project you want including video games, microcomputers, and music synthesizers. But be forewarned, you must use only the basic chips (i.e. no microprocessors). The course also has lectures, but most of the material in the lectures is a rehash of 6.032.

6.111 is an excellent lab course; however, be prepared to spend the last two weeks of the term in lab. If you complete your final project and can get it to work while a TA is watching, you are guaranteed to get a good grade. However, if you can't get your final-project to work your grade will be at the mercy of how well you did on the first four labs and on the one test. There are NO incompletes given in this course.

"The ideal way to take 6.111 is to take no other courses with it."
"It is vitally important to get a good lab partner."

Grade based on:	***Grading:***
Midterm	25% Midterm
Five 3 hr Problem Sets	25% PS's
4 labs	25% Lab
Final project	25% Project

6.114: Real-Time Computing (3-9-1) Fall 1982: Musicus

This is the first of a two-course sequence 6.114 - 6.115. It deals mainly with writing programs in PASCAL and assembly language to control external devices interfaced with a PDP-11 microcomputer. At the end of the course, students should be an expert in the RT-11 operating system. Most students find this course very interesting, and the labs relevant and useful in industry. Professor Lee is a very enthusiastic lecturer.

However, labs are tremendous time sink, and they account for most of the final grade. TA's and LA's are helpful, but they are not enough. Lab facilities are closed after 10 and are not open on weekends.

There is no textbook for this course. The Lab Users Handbook and the reference texts cover only some of the topics required for the labs. Using the manual is quite a pain. Students also find that lectures relevant to a lab are given too close to the lab due date.

"Rewrite, or perhaps write for the first time, a set of course notes."
"A text, or notes, that more closely parallels the progression of the material."
"I have felt that there was so much work it interferes with the appreciation and understanding. The semester turns into a series of overwhelming problem sets."
"One less machine problem would have made the course more bearable."

Grade based on:
3 short (15 min) quizzes
6 Machine Problem Sets

Grading:
10% Quizzes
90% Machine Problems

6.170: Big Program Engineering (3-10-6) Fall 1982: Liskov

This course is designed to teach the principles of good programming and documentation practice ("software engineering") through use of the programming language CLU. Hackers will like this language; it has some nice features. Unfortunately, you won't get much chance to hack in this course; the assigned machine problems are (possibly excepting the first couple) long and complicated. Combining this with the usual speed of the EECS machine, you should plan to spend a lot of time in 38-344, particularly in the middle of the night. This holds especially true for the final project; the amount of work expands to fill all available time. Getting a responsible lab partner to work with is vitally important.

Administratively, the course (like many others) is slow. Of the recent lecturers, Liskov is interesting when the material is interesting, Guttag not even then. Brian Oki is a good recitation instructor, but demands more from his students than other TAs.

"[Warning -- disk space full on PS:]
[Deleted files will be expunged in 30 seconds]"
"Even though I may get an A in this course, taking it has destroyed my G.P.A. I have little time to spend on other classes."
"CLU is a great language!"
"One does learn to regard programming as engineering!"

Grade based on:
Final and Midterm
4 machine problems (15 hours)
Final project (= infinite time)

Grading:
30% Tests
35% Labs
35% Project

Underground Course Guide Class Evaluation Form

Hi! We are a group of students interested in your opinions about course VI classes so that we can publish them in this term's the Underground Course VI Guide. Could you please take a few minutes to tell us how you feel about this course. Since most professors read your comments, this is a chance for you to tell them what you really think without giving your name. Besides, if you're frank, we can be frank in writing up the course guide. Thank you.

The Ad Hoc Underground Course Guide Committee

Course #_____ Main Lecturer_____ Rec. Instructor_____ TA_____

1. What's good, and what's bad about the lecturer(s) for this course?

2. Do you think you have a good recitation instructor? Is he helpful? Is he accessible? Why or why not?

3. What about your TA(s)? Do they know the material? Do they help you know the material? Do they know your name?

4. Were the facilities for this course adequate? Could you get computer time? Lab space?

*** Please fill out both sides and bring to front of class when done. ***

5. Are the text(s) or class notes useful? Are they existent? If certain sections were bad, which ones were they?

6. What are the prerequisites that you would list for this course? Are they the same as the ones that the course catalog lists?

7. Were the problem sets, quizzes, lectures, and labs coordinated? (i.e. Did problem sets or quizzes contain material not taught or not yet taught?)

8. If you were to rewrite the course catalog entry for the course, what would you stress? What figures would you give for class-lab-homework hours? (i.e. if you didn't think that going to lectures was necessary then class hours would be zero.)

9. Do you think you made a good choice in taking this course? Why or why not? Did you have a choice?

10. If lectures were given in the new EECS building, would you still attend?

Watch for the Underground Guide to Course VI in two weeks!

the underground guide to

COURSE 6

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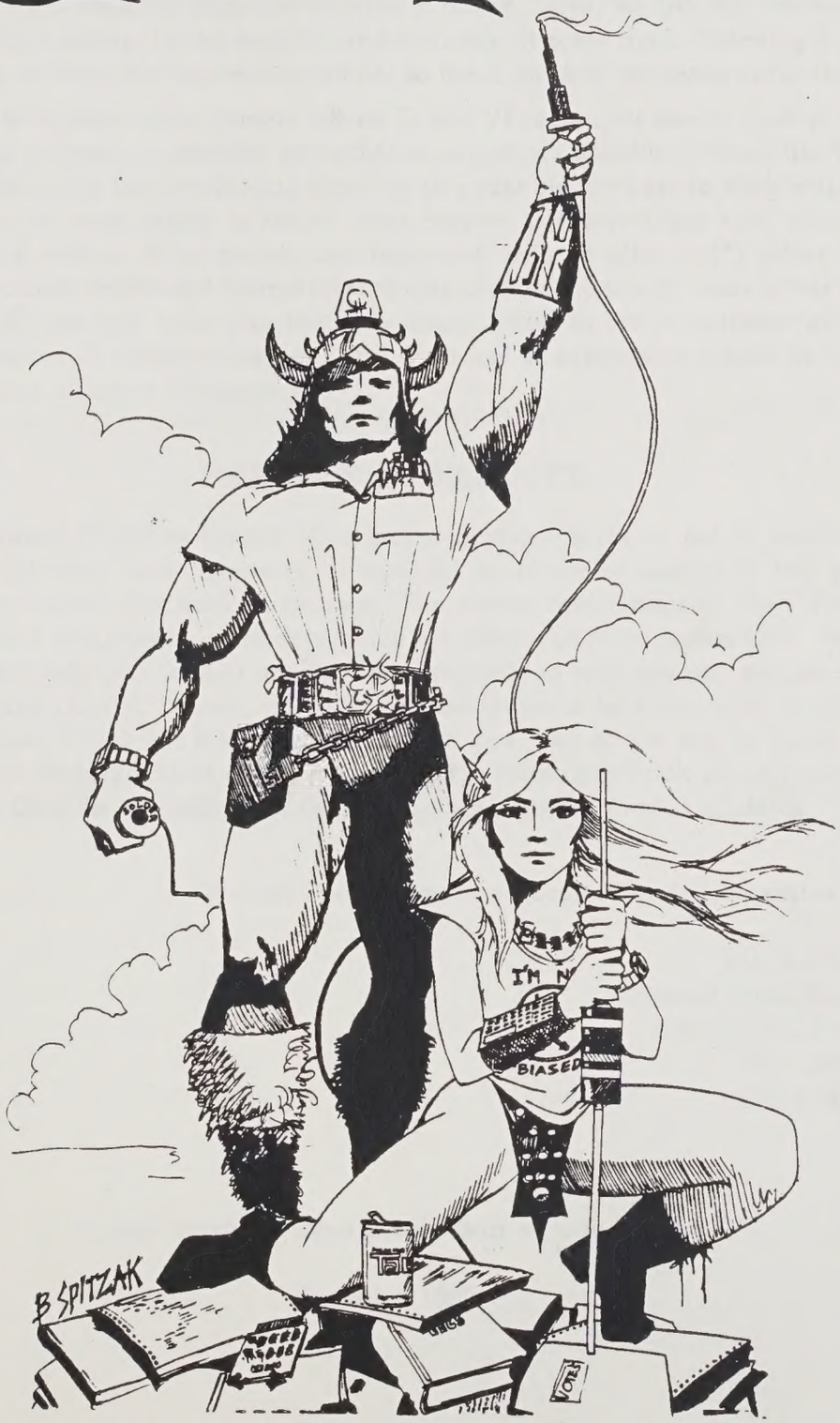


PREFACE TO STUDENTS

This is the second Underground Guide to Course VI. (Due to various technical difficulties, involving hardware problems on certain unnamed computer systems, it is being published later than we had hoped; still, better late than never.) Like the first Guide, it is intended as an aid to undergraduates in the department who want more information to help them plan their schedules. We have solicited input through various means, including questionnaires, evaluation forms, and interviews in recitations; the following pages contain the fruits of our labors.

We have tried to present those aspects of each course which the students felt were most important—those things which they would most want to tell someone who was trying to decide whether or not to take the course. The writeup for each course is a compilation of those comments. Content is more important then form; not every course can be described in the same way. However, certain information is included for each course. First, a "nickname" for the course (not the official title) follows its number. Then, we give a rating which is perhaps more accurate in describing the actual amount of work required than the registrar's rating. Also, we list the professor who will lecture the course this spring, to the best of our knowledge at press time. Following a compilation of student opinion, we list a few quotes selected not so much for their relevance as for their elegance.

WARNING: **this guide cannot present official Course VI policy, nor does it attempt to. We have tried to make it as accurate as possible; nevertheless, errors are possible** (indeed, likely). Material for some courses was taken from evaluation forms up to a year old (we have to work with what we've got). In particular, we were unable to review some courses, but have taken their writeups almost intact from the first edition; these courses are designated with an asterisk (*) before their course number. Also, as courses evolve and their structure may change drastically, some of our descriptions may be obsolete. We can only hope that this independent guide to the department will be of some small service to course VI undergraduates. (Any questions or complaints should be submitted in triplicate to our main offices in Budapest.)

PREFACE TO FACULTY

The Underground Guide to Course VI is intended primarily as an aid to students selecting their courses for the next term. However, it can also be of use to faculty in two ways. First, it is an avenue for student feedback on courses. The course descriptions in the Guide are taken directly from student comments—comments which are often otherwise unavailable. We hope that this information will help you to plan possible improvements to your courses, making them better for both students and faculty. Second, we would like the Guide to be a means of advertisement for lesser known courses. If you are interested in insuring that your course will be listed in the next edition, contact the Undergraduate Office sometime next term, and think about reserving a little time around Drop Date for our helpers to distribute questionnaires to your students.

The Ad Hoc Underground Course Guide Committee (AHUCGC)

Joel Gould, Publisher
Russell Finn, Editor-in-Chief
Bill Spitzak, Penciler/Inker
TEX Dover, Letterer
plus a cast of dozens

Special thanks to more people than we care to list.

December 1982

*6.001: Scheme (4-8-5) Spring 1983: Sussman

The course is structured around the language Scheme, a dialect of Lisp. It does provide a good background in the fundamentals of computer science, and is adequate preparation for later 6-3 courses. The lecturers (Sussman and Abelson) are considered pretty good; the tutorials are highly recommended. The course notes are useful, at the outset anyway; however, the last third of the notes are poorly written and incoherent.

A word about the labs: this course has a reputation for inadequate computer facilities. It is fairly common to spend all night in the terminal room, either waiting for a terminal or working on your program (most 6.001 students learn to debug efficiently or perish in the attempt). However, if you are either a careful planner or a programming wizard, you shouldn't have a lot of problems.

"I don't think I would have gotten through the course with my sanity if there were no tutorials."

"[About tutorials:] Questions were answered in great detail, and confusion was expunged."

"I spent about 25 hours a week on the average [on this course]. Luckily for me, I enjoyed it."

6.002: Introduction to Electronics (4-3-9) Spring 1983: Senturia

In general, 6.002 is a reasonably good course, but the quality varies from term to term, depending on the lecturer. Prof. Searle, who lectured this past term, received good reviews, but was not terribly exciting. The recitations are considered extremely worthwhile (except for Schreiber's).

The format of the course includes problem sets, quizzes, labs, and a final exam. While the problem sets do a good job in helping you learn the material, your grade depends mostly on the final exams. People complained that the material in the labs didn't correspond to the material in the problem sets and lectures. The precise nature of the so-called "short" quizzes vary greatly as a function of the recitation instructor; a few had "15-minute" quizzes that couldn't be finished in half an hour. The prerequisites (8.02 and 18.03) are considered helpful but not necessary, although without 8.02 you may have to work harder at the beginning to catch up on elementary circuits.

"Labs were unbearably far-fetched, because they discussed obscure applications of elements discussed nowhere else."

"I would recommend this course to anyone interested in electronics (instead of 6.071). This is really a science course, not an engineering course."

"A course where, if you fall behind, you might as well drop."

"The class notes are from a different lecturer and semester, which makes them difficult to use."

"For $9000+ a year, there should be enough money to give each lab team (2 people) a 2N5067 transistor."

---

*If you don't know what the asterisk means, then you probably didn't read the Preface to Students, where it is explained. Why don't you go do that now? We'll still be here when you get back.

6.003: Transforms and Filters (5-3-7) Spring 1983: Kennedy

Most students like this course. Even though the content is very mathematical, it is useful for 6-1's and enriching for 6-3's. Both Siebert and Kennedy are enthusiastic and organized and use good demos to illustrate relevant concepts. Siebert is clear, gives interesting historical anecdotes, and makes good use of the blackboard. Kennedy is also a good lecturer (far better than he is an undergraduate advisor). At the end of the course radios are studied, which people enjoy.

Like 6.002, this course is composed of problem sets, labs, quizzes, and a final exam (which is not weighted quite as heavily as in 6.002). The labs are longer than 6.002 and the postlabs are very difficult. The course is run on a set of notes which are well-written but are obscure towards the end. Taped reviews are helpful for the quizzes. 6.002 is a necessary prerequisite while 18.03 could be useful.

Among the recitation instructors, Smith is very good. He has an odd quiz technique: quizzes are not accepted unless the answers are 100% correct; credit is lost for each attempt to get the right answers. Bertsekas and Novak are also good. Of the TA's, Ellen Hahne and George Yundt give very good tutorials. Ann Aull also knows the material well and is a helpful TA.

"Siebert is a nearly perfect lecturer ... except that he assumes everyone is as brilliant as he is."

"Siebert is totally awesome."

"The content of the course grows exponentially."

*6.012: Semiconductor Devices (4-0-7) Spring 1983: Fonstad

This course deals primarily with semiconductor physics. Don't let the title fool you; you are taught very little circuit theory—you are expected to know that when you come in (more complex stuff than 6.002). A lot of people would have liked more emphasis on circuits and less on device physics. This is, however, a fairly practical course—you can do something with it afterwards.

This course's workload is fairly heavy and the pace is fast. A lot of people complained that the problem sets were too long and required an excessive amount of number crunching. Another fairly uniform complaint was that the text (Gray and Searle) was not very useful since it was out of date and expensive to boot. The hallmark of this course is the Design Project. This is a problem involving complex circuit design, assigned three weeks before the end of the term. This must be completed—they refuse to give incompletes on the basis of the design problem. Yet many people said this was the best part of the course.

"Actually the material was interesting—it's just that the pace was intolerable."

"The design project was an excellent integrating exercise. I learned more from doing it than from anything else so far at MIT. I certainly learned from doing it everything I didn't learn in 6.002."

*6.013: Quasistatics (5-0-5) — Spring 1983: Melcher

This course received rave reviews. The course teaches what it promises at a pace which is fast but not excessive. It is like a physics course: lots of powerful concepts augmented by a sturdy mathematical background. Yet it is not a physics course in that one does not get buried under math. Also, in contrast to some of physics, you can do real things with the course material; that is, they teach you how to design real equipment.

As far as the running of the course, people said that Haus was an excellent lecturer and very enthusiastic. Melcher is more sedate than Haus, but is very clear. Among the recitation instructors some found Smullin to be confusing but most rated the value of recitations very highly. One bad point, however, is that the same examples are used in recitations as are already solved in the notes. The quizzes in the course are trivial: if you know the material you will have no problem. Some thought this was a good idea since they are not trying to screw you on exams but merely seeing if you have understood the material so far. Others didn't like the fact that class average was so high.

> *"Best organized and taught course I've ever taken at the Institute! Haus is wonderful and really cares about his students. I was highly impressed."*
>
> *"The primary purpose of the course seemed to be to teach the course material. Tests were very reasonable. Instructors were friendly and good."*

6.014: Electromagnetic Waves (2-0-10) — Spring 1983: Kong

This course receives mixed reviews. Last term's lecturer, Staelin, was generally disliked; he was boring, unclear, and lectured straight from the class notes. The upcoming lecturer, Kong, has a better record from past terms (but watch out for his "plunn" waves and "etch" fields). Ippen was rated the better of the two recitation instructors; he was noted as being interesting, organized, and friendly. Smullin, on the other hand, was more incoherent and (according to some students) absent-minded. The tutorials are highly recommended as the most worthwhile portion of the course; Sching Lin was singled out as an extremely valuable TA.

The text is not very useful; the notes are good overall, but could be better organized. The following excerpt from last year's official grading policy is presented for its entertainment value (some of the coefficients may have changed):

- Late homework grades will be weighted by the factor $|\mathrm{Re}(e^{-\alpha t+j\omega t})|$ for $t > 0$, where t is time measured in hours, $\alpha = \frac{1}{96}$, $\omega = \frac{\pi}{24}$, and $t = 0$ is set at 4:00 P.M. on Friday when the homework is due.
- The term grade $G = |3Q + 5H + j6F|$ for $0 \leq Q, F, H \leq 10$; Q represents the total quiz grade, F the final exam grade, and H the homework and tutorial grade.

> *"Of all the people teaching this course, Sching presents the material the best."*
>
> *"Follows the general 6.01X teaching pattern: Snow 'em in lecture, work it out in recitation, figure it out on the problem set, and finally understand it in tutorial."*

6.021J: Cells and Tissues (3-4-6) Spring 1983: not offered

This is the first of the so-called "pre-med" courses in biomedical engineering, usually taken concurrently with 6.022J. However, even students who are not majoring in VI-1, option 3 (the official designation) found the course worthwhile. The lecturer, Prof. Weiss, was interesting, encouraged class discussion, and as clear as can be at 9:00 A.M. On the other hand, Peake's recitations were not found to be very useful, being too simple and disorganized; many people did not attend them. The TA's (known only to us as "John" and "Carolyn") were knowledgeable and friendly, as well as helpful in lab.

The problem sets don't count toward the final grade; however, you should be encouraged to do them, since they are very helpful in learning the material. The biggest complaint about this course was with regard to the labs. Although there are only four of them, they took a long time to do, and were often out of sync with the lectures. Many students complained that the writeups were required to be overly detailed. The lab facilities, however, are reasonably good. The class notes, on which the course is based, are very good; you don't have to buy the text (unless you like pictures of naked frogs). The notes, however, are not to be considered a substitute for attending lectures.

"Prof. Weiss has delivered a fascinating course, weaving together a myriad of relevant and current experimental works, creating a very coherent and dynamic picture of the material covered."

"Hot and cold running frogs in the lab (until you kill them)."

6.022J: Organ Transport Systems (3-2-7) Spring 1983: not offered

This course received very good reviews; the material was extremely interesting and well presented. Of the three lecturers, Mark was considered the best; Mikić was rated a little below par. However, all three are very knowledgeable in their respective field, and overall the lectures are clear and worthwhile. The text is OK; the notes are much more useful. However, the material on renal physiology needs some beefing up. Also, nobody liked the text on fluid mechanics (fortunately, that one comes free). Unfortunately, the instructors don't give a good idea of what should be read by when.

The problem sets don't come every week, but they do require a good bit of working through. They are relevant to the material, although sometimes the questions are too ambiguous. Each lecturer provided a recitation that was very helpful in relating lecture material to what would be on the quizzes; many felt that more recitations would have helped even more. The five labs are clear and easy to writeup; the lab facilities are adequate, but the apparatus is antiquated. The TA, Dan Leotta, knows the material well, and is friendly and helpful (especially for pithing frogs).

"As a pre-medical student, I feel that this has been the most useful course I've taken to learn about the body."

*6.032: Computer Hardware (3-0-7) Spring 1983: Ward

[This is the last term 6.032 will be offered; next fall the course will become 6.004, complete with lab space in the new building. Needless to say, the course will probably be greatly restructured at that time. Nevertheless, we present last term's review, for those of you who just can't wait. —Ed.]

6.032 goes from the transistor to the computer, discussing lower level concepts, such as hardware, microcode, and some digital design. It provides a good background for other courses, particularly 6.111.

There are two exams, of which the first is easy and the second is a killer. The general consensus about the lecturers is that Dertouzos is excellent, Ward is pretty good, but Fredkin is, um, poor. The pace accelerates noticeably about halfway through the course. The lecture notes need a good deal of work; don't miss the lectures (although they're somewhat disjointed), or you'll quickly get lost. The administration of the course is sloppy; corrections to handouts are common and not always prompt.

> *"The organization and continuity of the course was very poor. It was necessary to teach yourself much of the material."*
>
> *"Fredkin puts me to sleep."*
>
> *"The first half of the course ... was well run and interesting.... The course notes were some of the worst I have seen. They were at very critical points confusing, poorly edited, error filled, and incompetently written. These [notes] need a thorough revision into comprehensible English."*

6.033: Computer Systems (4-0-5) Spring 1983: not offered

Although this claims to be a systems course, it is also very much like a humanities writing course. The amount of paper work required is comparable to some HUM-D's: during the fall semester, there were twelve weekly one-page reading reports, a two-page case study, and two five-to-ten page case studies. Some of these papers are graded by the Writing Program as well as by your TA; help is available if you have trouble writing. The amount of reading necessary to do all this writing is also non-trivial; there are copious lecture notes, poorly written or incomplete in places, plus additional handouts and outside reading.

6.033 covers some very fundamental computer systems problems, though some felt that it falls short of being a really coherent systems course. Also, some students disliked the inherent non-rigorousness of the subject; to them, it seems more like economics than computer science. On the other hand, some liked this aspect of the course. Regarding the instructors, the consensus was that Reed's lectures were boring, while Saltzer's were much more animated and dynamic. Some students complained that the grading varied significantly among TA's.

> *"6.033 is a humanities course."*
>
> *"Grading on the weekly reading reports seems almost random."*
>
> *"Tests were designed in such a way that a minor misunderstanding usually resulted in nearly total loss of credit on a problem."*

6.034: Artificial Intelligence (4-0-4) Spring 1983: Not offered

As in past years, 6.034 features a tag-team system of lecturers who discuss whatever they happen to be working on. This results in an overview style, which some people liked while others found confusing. In contrast to other years, there are now two exams plus a final, and a number of problem sets which are actually being graded! However, the 6.034 policy on exams remains unchanged: they are designed to be a "learning experience," i.e. there may be questions which seem to introduce new material. (In particular, many students complained that the second exam was too hard.)

Most students felt that 6.001 was an unnecessary prerequisite; all that is necessary is a passing familiarity with LISP (e.g. the SIPB IAP course). The class notes were considered well-written, apart from a large number of typos, and a tendency to use Val-Speak in examples (grody to the max). Of the three major lecturers, Winston was considered the best; Berwick was adequate, and Lozano-Perez was difficult to follow at times.

"We are working with things that we don't get to see in action, therefore they are rather abstract, seem useless, and are hard to get a handle on."

"I feel the lecturers are trying to teach what they know rather than seeing how many people they can flunk."

"The people who wrote these notes were the only literate people in Course Six."

"Some lectures tend to act as severe depressants—there were instances of snoring in class."

6.035: Compilers and Interpreters (4-0-8) Spring 1983: Guttag

[With the departure of Prof. Hammer, the course will probably be greatly restructured as part of a two-term sequence (following 6.170); hence, comments from previous years may be of limited help. However, they're all we have to work with (but remember—we warned you). —Ed.]

The most famous (infamous?) features of the course (apart from the late Prof. Hammer) are the lengthy problems sets and the multiple choice exams. The problem sets usually involve long, obscure essays. Last year, a new system was tried in which students were assigned to lead classroom discussions based on previous years' questions. This failed miserably—most students were unenthusiastic, at best. The actual written problem sets involved an ongoing project to write an APL compiler in PDP-10 assembly code. Next year, with 6.170 as a prerequisite, who knows what they'll try?

The by now notorious exams feature true/false and multiple choice questions, with heavy penalties for incorrect answers to "discourage" guessing; there are always a few students who receive a negative score. (A bit of advice: don't be too timid.) The questions are often intentionally deceptive; watch out for pathological cases and other tricks. One useful tack is to try to get hold of a previous year's exam; often questions are carried over from year to year practically unchanged.

"Hammer was EXCELLENT!!! . . . I feel sorry for those who will not be able to enjoy his lectures."

"When Hammer showed up on videotape—I didn't get up at 9 AM to watch TV!"

"It seems that students are not knowledgeable and skillful enough to lead a discussion that benefits the other students."

"The answer to all 6.035 questions is 'It depends.' This makes multiple choice tests an exercise in probability."

6.036: Problem Solving Paradigms (2-0-4) Spring 1983: Hewitt

This course purports to be an extension of 6.034, and to deal with such topics as predicate calculus and resolution theorem proving. Unfortunately, there is little organization or continuity, and the subject matter is not clearly defined. The grading policy was similarly amorphous, degenerating into a state where an A on the term paper gave you an A for the course. The term paper itself generally involves a search for relevant literature in order to expand on some concept, based on a list of topics handed out in class. Despite these shortcomings, most students found the material interesting.

"Q. What was good about this course? A. Not much—other than an easy twelve units."

"I couldn't tell you what the course was about."

"You learn more from researching the term paper than from the whole rest of the course."

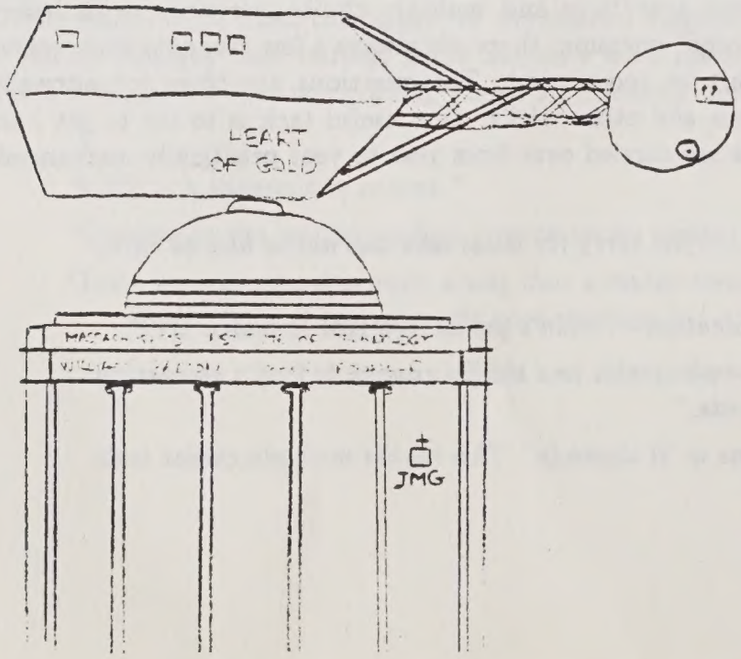
*6.041: Probability (4-0-7) Spring 1983: Drake

Prof. Drake is generally considered one of the finest lecturers at M.I.T.; he is clear, coherent, comprehensible, and above all entertaining. If you miss him in lecture, you can still see him on the video tapes, which are useful for reviewing the material; there is usually a rush to use them just before quizzes, so plan ahead. The problem sets are graded on a statistical basis, i.e. one or two problems are selected at random and graded. There is an optional third quiz, if you're going down the tubes. The tutorials are mandatory, but they're also quite useful. This is a well organized course, both in the material covered and in the administration. 6-3's will find nothing in it pertinent to their major, but will not mind taking it anyway.

"Last year's problem set solutions were not clear enough to copy."

"Drake is the type of lecturer who can make this totally boring material seem interesting and entertaining."

"All these years and Oscar has yet to find his dog. That's going against the odds for you."



"THREE MILLION,
SIX HUNDRED THOUSAND
FORTY TWO
TO ONE, AGAINST
AND FALLING..."

6.042: Complex Curve Analysis (4-0-6) Spring 1983: Miller

This course received the highest positive response of all courses surveyed. The lecturer was clear, straightforward, and handed out copies of the transparencies used during the lecture at the beginning of class—something we wish more professors would do. The TA's were very accessible out of class, and well equipped to handle the material. Of the three recitation instructors, Valerie had the most curves to work with, although Debbie did display very symmetric asymptotes, especially when using the blackboard. Many students commented favorably on the "wild" review session before the final exam, remarking that the TA's had solutions to all of their problems. Grading was fair; not too much emphasis was placed on performance in class. Although 6.042 is not a required subject for either 6-1's or 6-3's, nearly all the students taking it as a free elective described it as a "must" for course VI majors.

"The catalog says it's about curve analysis. Well, that's what I did every recitation, by God!"

"Lance seemed kind of square to me. I don't know what he was doing as a recitation instructor for this course."

"Lance taught me about curves I never knew existed! Much better than any of the courses I've had at Wellesley."

"I couldn't figure out what this course was all about, and I'm a math major!"

6.045J: Formal Study of Automata (3-0-7) Spring 1983: Leiserson

6.045J is MIT's answer to "Gödel, Escher, Bach." It takes a mathematical approach to computation theory; there are a number of proofs (but nothing rigorous), and many applied math majors also take the course (as 18.420J). Most students felt some exposure to higher-level math (such as 18.063 or 18.700) was helpful. Prof. Sipser received nearly universal praise as a lecturer; he will not be teaching the course this spring, and it might be worth the wait (if your schedule permits). 6.045J may or may not be required for you (depending on how long you've been at the 'Tute). Many who were forced to take it did not mind having to take it; those for whom it is an elective felt they had made a good choice.

"[Sipser] is exciting and interesting. He keeps me awake."

"This course has zero practical application, but is fun and teaches you to think in new ways."

"Having a quiz on Monday and a PS on completely different material due on Wednesday is [lousy]."

"I put it off as long as I could because I do terribly in math courses. I found out it wasn't a math course and I really like it now."

6.046: Algorithms (3-0-8) — Spring 1983: not offered

This is the "order of" $(O(n), O(\log n), O(n^2), \ldots)$ course. It is *not* a programming course. It covers standard computer techniques such as sorting and searching, manipulation of data structures, graph algorithms, etc. It also covers the traveling salesman problem and NP completeness among others, and has, needless to say, a lot of proofs. There was good continuity from one lecture to another; the lecturer, Prof. Rivest, though he did get the points across, was occasionally boring, especially when he got bogged down in proofs.

The TA, Alan Sherman, who helped run the course, was thought to be concerned for students and knowledgeable, though his explanations were not always clear. The problem sets were taxing, and so were the lengthy take-home exams. The biggest complaint was that the course required a lot of math, and that 6.041 should have been a prerequisite. The class notes were good, but only covered part of the material. The rest was covered in multiple text books, which tended to run into big bucks. Most students were glad they took this course.

"This is an ANALYSIS of algorithms course. Better be familiar with probability, linear algebra, calculus. Otherwise you get swamped."

*6.088: Robotics (3-0-5) — Spring 1983: Horn

The course covers manipulators and vision but tends to concentrate on the dullest and grungiest portions of these topics. The manipulation portion of the course has matrices galore and uses a lot of control theory. The vision portion is interesting until it, too, turns to math. Horn talks primarily about what he himself has done and as a lecturer is unenthusiastic. People wanted more theory such as obstacle avoidance and gripper design and less on dynamics and control. Both the midterm and the final are long take-home problem sets.

"The concepts were interesting; the math was a pain."

"B. K. P. Horn is a prime example of artificial intelligence."

*6.101: Analog Lab (1-4-1) — Spring 1983: Paton

This is the department's basic analog lab. The TA's in this course are good but the lecturer (Paton) is not. He is poorly organized and does not get any concepts across. Fortunately you can ignore him. The assigned labs are reasonably coherent and if you know anything about electronics you should have no trouble with them. In the second half of the term there is a design project, which is generally not as complex as the projects in 6.111. As the design project occupies the greater part of the second half of the term, recitations end about halfway through the term, although the TA's are always available.

"... if you want an easy lab ..."

"After several weeks the TA's gave up trying to correct the lecturer."

6.111: Digital Lab (2-6-2; 0-12-18 last third) Spring 1983: Troxel

6.111 is a high paced course on digital design. How well you do in this course depends on how well you learn how to debug circuits and their designs. Understanding the course material will make you proficient enough to get a job in digital design.

The complexity of the course material increases blindingly as reflected by the tests and labs. The first test deals basically with combinational logic, the second with finite state machines, and the third with microprogramming and control sequencers. The difficulty of the labs themselves also vary; the time required to perform the first lab is negligible, while some people never finish the fourth lab. Prof. Troxel is easy to follow if you read his handouts, but he too moves too quickly around Lab 4.

The second half of the course is devoted to the famous final project. Decide early who your partner will be and what your project will be; you will have precious little time to decide after Lab 4 is due. The project is expected to be fairly complex; the only restriction is that you cannot use a microprocessor. Typical projects have included video games, digital filters, and music synthesizers.

6.111 is an excellent lab course, but be prepared to spend the last two weeks of the term in lab. If you complete the final project and get it to work while a TA is watching, you are assured a good grade regardless of how you have done earlier in the course. Be warned: there are NO incompletes given in this course.

"The ideal way to take 6.111 is to take no other courses with it."

6.114: Real-Time Computing (2-9-0) Spring 1983: Lee

This is the first of a two-course sequence; many students who take 6.114 go on to take 6.115 as well. It deals with writing Pascal and assembly language programs to control external devices interfaced to a PDP-11. Many of the skills learned (including knowledge of RT-11, the operating system used) are useful in industry.

Last term's professor, Musicus, is good, although he talks too fast; his lectures are often unrelated to the lab material. This term's lecturer, Lee, has a history of being enthusiastic. The TA's, Bill Hofmann and company, are very good; they know the material well, and are helpful and friendly.

The lab facilities are adequate, except right before assignment deadlines when the system gets loaded. The lab facilities have a history of being closed frequently (after 10 and on weekends). This is unfortunate, since the labs are a tremendous time sink. Furthermore, late work is not accepted; all work has to be handed in on time, or else!

"Overall, a useful course to take."

"I have felt that there was so much work it interferes with the appreciation and understanding. The semester turns into a series of overwhelming problem sets."

6.115: Microprocessor Lab (1-10-3; last third 0-15-5) Spring 1983: not offered

This lab teaches students how to build a microprocessor-controlled circuit. Like 6.111, this course requires lots of work building the labs. (At least there are no quizzes or problem sets.) There is also a final project, which usually demands vast amounts of time, but which usually turns out to be impressive if you ever get it working.

Professor Lee, while very knowledgeable, tended to give too much detail (on pinouts, detailed machine language routines, etc.), putting students to sleep. But the course is mostly self-taught; lectures are not necessary for doing the labs. Of the two TA's, Jack Summers was more willing to spend lots of time with a student, but Chong Lee was better at helping students debug their circuits. A very useful course, since no other courses teach microprocessor circuit design.

There should be better and more facilities, although it was stated that they are trying to get new, more powerful microprocessors. There are a limited number of lab kits and 8080 boards, and the course is only offered once a year, so it is usually oversubscribed. This year, about 10 people were turned away.

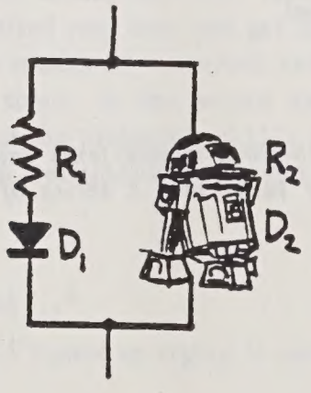
"The lab notes were useful, but could have been organized and indexed *better."*

"Every course VI person should be able to design a micro-processor based circuit."

"The course should be more systems oriented."

6.151: Semiconductor Lab (0-12-0) Spring 1983: Maby

6.151 is a twelve hour per week lab course. Students design and carry out a lab project of their choosing. They work as individuals or in small groups. The class, which is typically about a dozen students, gets together once each week. Most class sessions are for instruction in lab concepts and techniques. Occasionally class time is used to discuss the progress of each project, and the instructors share their past experiences to solve the real life problems that have occurred. The class is fairly informal. Good grades are given for good effort. The instructors were helpful and supportive in the students eyes. The time spent varied widely from week to week, as is the nature of most lab courses. The students were generally happy with the course, and felt that it met their expectations.



6.170: Software Lab (3-15-3) — Spring 1983: not offered

This course is designed to teach the principles of good programming and documentation practice ("software engineering," they call it in the catalog). It is now required for 6-3's as a prerequisite for 6.035. There have been a number of lectures over the last few terms, all about equally tedious; the latest, Gifford, is perhaps slightly better than some. He knows the material, but is unenthusiastic about it. Of the recitation instructors, Bob Baldwin drew the most praise; Ed Walker, the most criticism. The CLU reference manual was characterized as not terribly clear; the class notes, as not terribly relevant. There are a couple of quizzes, which are based heavily on the lectures (perhaps the best reason for attending) and thus have little to do with the labs.

The most salient feature about the course is, of course, the labs. 6.170 competes heavily with 6.001 for use of the EECS machine "Deep Thought" (which they ostensibly share). Look forward to seeing a lot of the inside of 38-344—especially towards the end of the term, when the infamous final project rolls around. In previous years this has involved a macro assembler and limited subsets of Pascal and VisiCalc; next year's should be even more fun, as they'll have a whole year to prepare for it. Be warned that the amount of work expands to fill all available time, and that it is vitally important to get good lab partners who will do their share of the work.

"EECS has too many users and not enough disks. So what else is new?"

"All TA's in 6.170 are too hung up on their own personal stylistic choices."

"This course is probably the worst required course in VI. It could easily be one of the best."

"Never covered: how to use TED, how to compile and execute, how to debug ... AARRGHH!"

6.312: Acoustics (4-0.2-6) — Spring 1983: not offered

This course is very interesting, due mainly to Prof. Bose. His lecturing style is good; very clear and enthusiastic. The administration of this course is unusual; no partial credit is given on the problem sets, and no solutions are handed out. Instead, you can redo problem sets as often as you want, for extra credit. Many students found this a good way to learn the material. The tests are open book and unbounded time, but have a tendency to be a bit long.

As for the material itself, students found it interesting, if sometimes a bit unsettling. Many common beliefs about acoustics were shown to be at best half-truths. The two-hour speaker lab was fun; it was good to see applications of models. The text is old (1954!), out of print (Xeroxed), and is useful mainly as a reference. The tutorials are useful—the TA's are very helpful.

"Bose is fantastic!"

"You will probably leave this course feeling that you know much less than you did at the beginning."

2.40: Thermo (4-0-6) Spring 1983: (?)

[Yes, we know, 2.40 isn't in Course VI. But many 6-1's take it to satisfy one of their many options for restricted electives, so we decided to talk about it anyway. We did put it here in the back, so that the 6-3's, who don't get many choices any more, wouldn't notice it. —Ed.]

Last term's lecturer, Prof. Cravalho is articulate, sedate and so soothing that, at 9 o'clock in the morning, you just have to fall back to sleep. Since the course uses his text (co-written with Smith), lectures go by the book. Conclusion: either read the book or go to lectures. Quizzes are straightforward if you look at the problems and make a good cribsheet beforehand. Problem sets consist of problems assigned from the book. Solutions to most of them should not be hard to find around your living group. They involve lots of trashy, simple algebra; not hard, just long. Recitation sections are just for solving more problems.

"The thermodynamic method: Select the system, model the processes ... First Law ... Second Law ... and out pops the answer from a mass of formulae. No sweat."

"Thermo is just plain boring."

"Too many tiny formulae to keep track of."

When we asked one of our helpers to design a questionnaire form, we didn't realize how excited about it he would get. So excited, in fact, that he included a question which, frankly, we would not have thought (dared?) to ask. Perhaps he was trying to see just how closely people pay attention to these forms. He should have realized that MIT students are always on the ball, or, alternatively, that if you ask a hack question, you get a hack answer. And so we present some typical answers we got to the question, *"If lectures were given in the new EECS building, would you still attend?"*

"Yes."

"No."

"What?"

"Don't know."

"This is a dumb question."

"What new EECS building?"

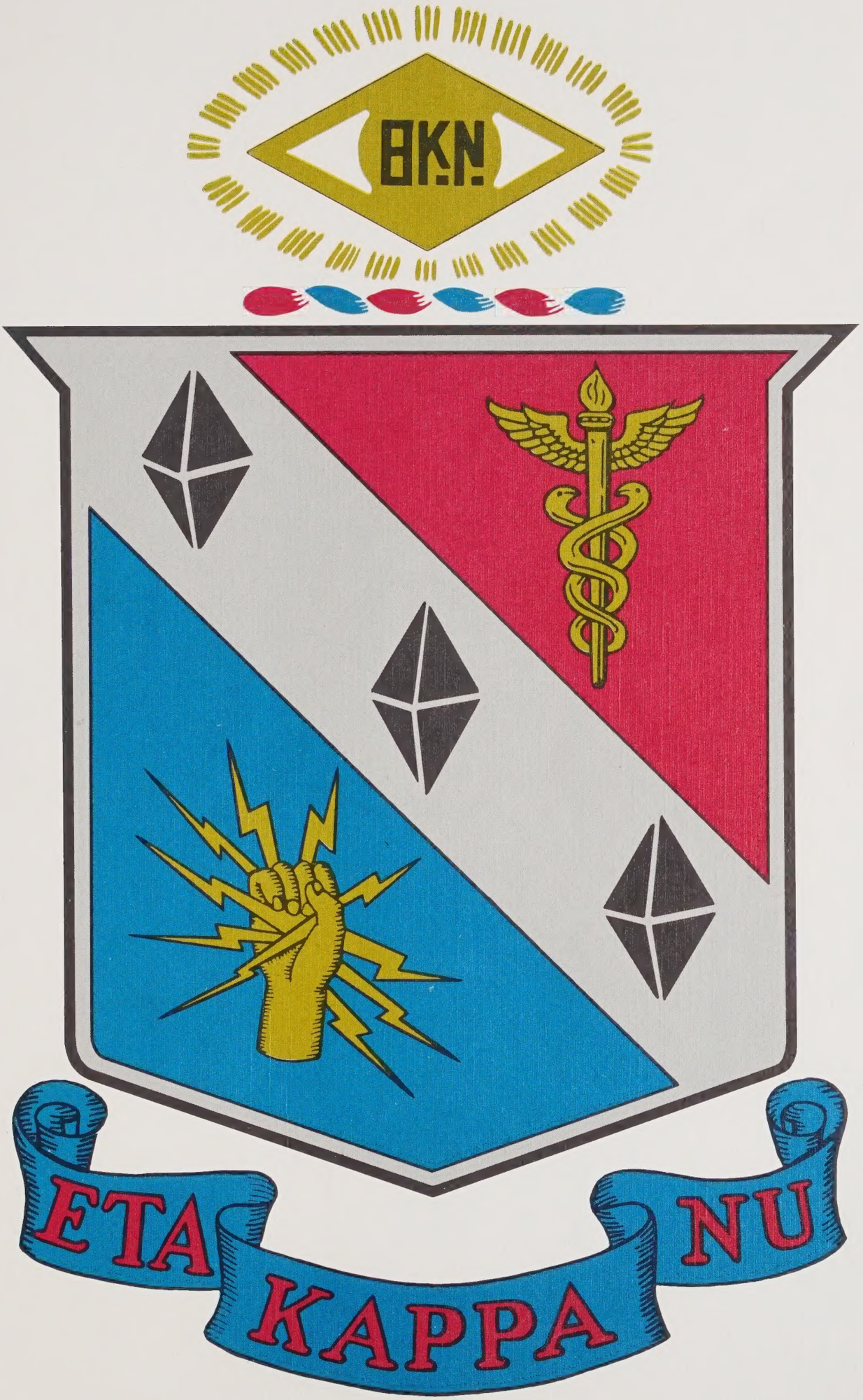
"No. It's too ugly. Grody to the max."

"Who knows? I'm a senior. I won't ever see it."

"Only if they finished the walls, and put in some lights and chairs."

"Religion forbids me from attending class in lecture halls which don't face Mecca."

"Will it look like a concrete jewelbox? Will it have decent ventilation and fresh air? Will it have fast, efficient elevators? Is Joel Moses a born-again Christian?"


HKN
ETA
KAPPA
NU

Brewster L. Kahle

has this day been admitted into Membership in

Eta Kappa Nu Association

in recognition of excellent scholarship and other attainments by which interest and ability in the profession of Electrical Engineering have been manifested.

By *Beta Theta* Chapter

Russell L. Lueg
International President

6 December 1981
Date

John Gonzalez
President of Chapter

Donald L. Mason
Secretary of Chapter

Etta Kappa Nu
February 28, 1982

Professor Joel Moses
38-401
Head of EECS Department

Dear Professor Moses:

We feel that the Course Six lounge in its present form, fails to attract a significant fraction of the current and potential EECS students. This is not only a problem but an embarrassment when compared to the popularity of lounges of other Departments. These other lounges serve social and educational purposes by encouraging conversations between students of different areas to foster shared learning and cooperative growth. Course Six has difficulties with student to student comaraderie and cooperation. We feel this is a problem of very high priority and should be addressed as soon as possible.

What we propose is to make the Course Six lounge (Jen Chu Lounge 38-201) a more attractive environment for our fellow students to come to talk and work. In this pursuit, we propose a number of improvements to the lounge and its use. We suggest weekly social hours, the installation of a combination lock, and a hot beverage facility to foster interaction. These proposals will be addressed separately, though I wish to emphasize that they are all integral to our overall plan.

On the basis of the success of our first social hour in the Lounge, we wish to continue this in a regular way. This would amount to a social hour in the Lounge on the weeks that we do not have a speaker somewhere else. Course six students may then make it a weekly event and count on it. This would also serve to boost the attendence at our social hours with speakers. Our example last friday (Febuary 26) attracted about seventy people, including a number of faculty and administrators. Informal interaction should be promoted, and we are willing to administer it.

We owe our success to three factors: widespread advertising, high quality food and beverages, and good timing during the week (friday afternoon). We plan to move the social hours a bit later on Friday to insure that everyone is finished for the day. We, as a group, are willing to run the advertising and the functions. We do need however, money to support the events. To expand the social hours past what we had last Friday, we will need approximately one hundred dollars per event. We feel that it is important that the social hours are free in order to attract more people. For the term, the cost would come to approximately $1200, which includes the cost of the social hours with speakers, which the department already funds. To continue the momentum, we wish to have one this Friday, March fourth.

As the lounge is administered now, people do not use the lounge since it is open only eight hours a day, and as we know, course 6 students are awake at all hours. A combination lock would solve this problem without some of the vandalism threats associated with

leaving it open all the time. The combination would spread by word of mouth, restricting in some way the number of people that would know it. Posting the combination in the computer room in building 38 with some sort of advertisement would encourage new students to use the lounge for breaks. The computer room has such a lock which provides some security from random people, while easing access to the facilities. The cost of this must be incurred by the department since we only net about $120 a year from initiation fees. The lounge would still be officially opened and closed by our members to keep the Lounge generally neat. This lock would promote continuous use of the Lounge.

To further attract people to the Lounge when there are not social hours, we propose to install and maintain a hot beverage facility. This would provide free makings for coffee, tea and hot chocolate. With this feature, we feel that the lounge would be used in the context it was intended: to encourage communication among EECS students and to spark interest in the field.

The facility we propose involves a cabinet, safe-guarded hot water heater, supplies, and a plastic mat to guard the carpet. The heater is a General-Electric "electric tea-pot" that has the feature that it turns off before it overheats (this has been tested and it functions flawlessly). To add a second layer of safety against fire we are installing a timer unit that only allows the heater to be powered for five minutes at a time. This timer will be wired into the locked cabinet so that there is no way, short of total destruction, to power the unit for more than 5 minutes unguarded. Five minutes is enough time to boil water, but not enough to damage the machine if it were empty for that time. The unit will be mounted on a formica topped cabinet (by the black boards). The formica would also help prevent fires. A similar unit has been used in the Artificial Intelligence Lab for as long as I have been there without a hitch. The electric system for the applicable wall outlet can handle the load of the heater, for the circuit breakers are rated for more than the necessary power. Short of deliberate arson, this unit should not cause a fire.

To discourage damage to the rest of the facilities we will place a large plastic mat on the carpet of the whole area of the water heater. This should contain the occasional spills so that they can be mopped up with the available towels. If the responsible person does not clean it up, it will dry on the mat and not damage the carpet. Additional garbage cans will be added to encourage neatness.

The facility will be cleaned every night by one of our members upon shutting the lounge. Our commitment to this facility is such that we are willing to spend our pledge fees on the start-up costs. If, on the other hand, the department or some organization could see to funding it or helping with the cost, we would be free to use our very limited resources for other purposes. Maintaining the supplies should be a small expense on the order of $10 dollars per ~~term~~ week.

Sparking communication and cooperation within the department is one of our most pressing and ambitious goals for this term. We feel that the improving the Course Six Lounge is one way we can immediately affect the student body in a positive manner. We are willing to put in the time if we can get the funding to do it.

Please contact Brewster Kahle (247-8355), John Gonzalez or mail to HKNatAI, if you have any comments or recommendations.

Sincerely yours,

Brewster Kahle
Vice President Eta Kappa Nu

HKN